

# Analytical solutions describing the oblique flow of a viscous incompressible fluid around a dendritic crystal

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## Abstract

This article considers the hydrodynamic problem of an oblique flow of a viscous incompressible fluid around the tip of a dendritic crystal. Approximate analytical solutions of Oseen's hydrodynamic equations are obtained in 2D and 3D cases using special curvilinear coordinates. It is shown that the projections of the fluid velocity change significantly with a change in the flow slope and Reynolds number. The theory developed in this work has a limiting transition to the previously known solutions for the rectilinear (without tilt) fluid flow around a dendrite.

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